

DETAILED ACTION

Status of Claims

1. Applicant's reply filed on 8/4/2008 is acknowledged. Current pending claims are 1, 3-4 and 6-25. Claims 1, 3, and 7 are amended. Claims 2 and 5 are cancelled. Claims 21-25 are new.

Response to Amendments

2. Applicant's reply filed on 8/4/2008 is acknowledged. The applicant has incorporated the subject matter indicated previously allowable into claim 1; therefore, the previous rejections have been withdrawn. Claims 13-20, previously allowed, and claims 3-4 and 7-12, previously allowable subject matter, now stand rejected since, upon further consideration, a new ground(s) of rejection is made as described below.



Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 3-4 and 6-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner does not understand why the applicant is claiming a "rotary shaft" when Figs. 3 & 5, for example, shows that the rotary shaft (33) or (233) is **not a shaft**.

Dictionary.com Unabridged (v.1.1) -

shaft  [Audio Help](#)  **[æft, ʃaft - Show Spelled Pronunciation]** **[shaft, shahft] Pronunciation Key**

- Show IPA Pronunciation:

-noun

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1. a long pole forming the body of various weapons, as lances, halberds, or arrows.
2. something directed or barbed as in sharp attack: *shafts of sarcasm*.
3. a ray or beam: *a shaft of sunlight*.
4. a long, comparatively straight handle serving as an important or balancing part of an implement or device, as of a hammer, ax, golf club, or other implement.
5. Machinery. a rotating or oscillating round, straight bar for transmitting motion and torque, usually supported on bearings and carrying gears, wheels, or the like, as a propeller shaft on a ship, or a drive shaft of an engine.

5. Claims 3, 8, 11, 15, and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In regards to claims 3, 8, and 15, the phrase "extended from a side of the ring gear toward the first spline shaft" is not understood. In regards to claims 11 and 18, a band driving unit (not shown) disposed at a "side" of the band provides tension to the band to frictionally engage the ring gear outer surface is not understood. Also, in regards to claim 17, it is not understood how the band brake controls the first and second rotary shaft speed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-4, 6-10, 13-17, and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burk et al. (US Patent No. 5000016) in view of Koshiga et al. (US Patent No. 6148646).

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8. Burk et al. teaches a washing machine comprising an outer tub (wash tub 14); inner tub (wash basket 16); and a washing machine casing (cabinet 12). The inner tub is rotatably disposed in the inner tub for containing laundry therein. A rotation transmission transmits a rotational force of the induction motor to rotate the inner tub and pulsator in opposite directions (Column 3, Lines 18-22) with a rotational speed lower than a rotational speed of the induction motor in laundering operation (*via gear reduction*); and is capable of rotating the pulsator and inner tub in the same direction (Column 3, Line 33) with a rotational speed identical to the rotational speed of the induction motor in the dehydrating operation (*clutched operation*), (Column 3, Lines 0-42). A speed adjusting device (band brake 70) is taught for controlling a rotational speed of the ring gear (37). The speed adjusting device has a band (70) surrounding an outer circumference (hub surface 44) of the ring gear (37), Fig. 4. A band driving unit (not shown) provides tension to the band to frictionally engage the ring gear outer surface (Column 3, Lines 63-65). **Note:** the limitations “to adjust a rotational speed of the rotary shaft in laundry operation of the washing machine” and “for controlling a rotational speed of the ring gear to adjust rotational speeds of the first and second rotary shafts in laundering operation of the washing machine” are method steps and are not given patentable weight in the apparatus claims. As long as the apparatus is capable of such operation it anticipates the claim.

9. A pulsator (18) is disposed in the inner tub to perform agitating operation. A second rotary shaft (vertical shaft 36) is rotatably disposed inside the first rotary shaft (spin tube 36) and is connected to the planetary carrier (42) and is fixed to the pulsator

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(18) in order to transmit a rotational force of the planetary carrier (42) to the pulsator (18), Fig. 4. A planetary carrier (connecting carrier plate 42) is connected to a planetary gear (40) to be rotated by a revolution of the planetary gear. The rotation transmission means is arranged between the inner tub and induction motor and includes a sun gear (46) rotated by the rotational force of the motor; a ring gear (37) is arranged to have a certain interval from an outer circumference of the sun gear (46); a planetary gear (40) is meshed with the outer circumference of the sun gear (46) and an inner circumference of the ring gear (37); a hollow-shaped rotary shaft (spin tube 36) is connected to the ring gear (37) and fixed to the inner tub (16) to transmit the rotational force of the ring gear (37) to the inner tub; and a clutching device (52) selectively transmits the rotational force of the motor only to the ring gear (46) or to the sun gear (46) and the ring gear (37) simultaneously. The clutching device includes: a first spline shaft (64) formed on a circumference of a connecting shaft (48) for connecting the sun gear (46) with the motor; a second spline shaft (58) "extended from a side of the ring gear (37) toward the first spline shaft (64)"; a clutch (axially displaceable member 54) movably disposed between the first spline shaft (64) and the second spline shaft (58) and selectively meshed only with the second spline shaft (58) or with the first spline shaft (64) and the second spline shaft (58) simultaneously; and a clutch driving unit for moving the clutch (Column 3, Lines 48-57). The clutch is moved by an axially movable actuator arm (66) which moves the clutch (54), as needed. A return spring (coil spring 68) is provided for returning the clutch into an initial position when the

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actuator arm (66) releases the clutch – such as in dehydration. Burk et al. describes the operation of the clutch:

10. "Referring again to FIG. 4, when the washer is operating in the spin mode, a clutch 52 is provided to rotationally lock the ring gear 37 with the shaft 48 so that the basket 16 and the agitator 18 will spin together. The clutch includes an axially displaceable gear member 54 having teeth 56 on an outer circumference thereof which engage with corresponding teeth 58 on an annular axial extension 60 of the ring gear 37. The displaceable gear 54 has a plurality of axially aligned teeth 62 on an inner surface 63 thereof which are engageable with outwardly projecting axially aligned teeth 64 carried on the shaft 48. Axial movement of the gear 54 will selectively engage or disengage the gear teeth 62 with the shaft teeth 64. When the gear teeth 62 are engaged with the shaft teeth 64, the ring gear 34 will be rotationally locked to the shaft 48. When the teeth 62 are disengaged, the ring gear 37 will be free to rotate relative to the shaft 48." (Column 3, Lines 30-46).

11. The embodiment above of Burk et al. does not teach that the PSC motor 20 of Burk et al. is directly coupled (coaxial) to the rotational axis of the inner drum; however, Burk et al. teaches a direct-drive connection which eliminates the need for a pulley, (Column 2, Lines 66-68), Fig. 6. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Burk et al. with the second embodiment of Burk et al. to create a direct-drive (no pulley) washing machine in which the motor is coaxial with the inner drum, and connecting shaft, to create a simple washing machine which eliminates the need for pulleys/belts to achieve the expected result.

12. Burk et al., as modified above, does not teach that the direct-drive motor is an induction motor; however, Koshiga et al. teaches, paragraph [0025], the use of a rotor 45a having a magnet on its outer circumference for apply a magnetic field and a stator 45b disposed at the outer circumferential side of the magnet for applying a magnetic

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field to the rotor. A gap S is provided between the stator 45b and the rotor 45a, Fig. 12. The inner tub rotated co-axially with a rotational center of the rotor, Fig. 1. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Burk et al. with Koshiga et al. to create a working, compact, direct-drive induction motor driven washing machine to achieve the expected space-saving result.

13. In regards to claims 1, 3, 8, 14-15, and 22-23, Burk et al. does not teach the clutch selectively meshed only with the first spline shaft (sun gear) since the clutch of Burk et al. is always engaged with at least the second spline shaft (ring gear), only. It has been held that a reversal in parts would have been obvious (*In re Gazda* 104 USPQ 400). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Burk et al. to have the clutch engaging with either spline shaft only (ring or sun) to achieve the expected result

14. In regards to claims 4, 9, and 16, Burk et al., as modified by Koshiga et al., does not teach the solenoid mechanism for moving the clutch; however, it has been held that an obvious choice in design is not patentable (*In re Kuhle* 188 USPQ 7). Furthermore, Koshiga et al. teaches the use of a solenoid (46c) to move a clutch (Column 10, Lines 34-43) providing support for it's pervasiveness in the art, Fig. 2. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Burk et al., as modified by Koshiga et al. to have a modern electronic means (solenoid) to move the clutch to achieve the expected result.

15. In regards to claim 21, Burk et al., as modified by Koshiga et al., above, teaches an inner-rotor induction motor and not an outer-rotor induction motor; however, it has

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been held that a reversal in parts would have been obvious (*In re Gazda* 104 USPQ 400). Furthermore, Koshiga et al. teaches that these are equivalent obvious variants (Column 7, Lines 45-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Burk et al., as modified by Koshiga et al., to have an outer-rotor induction type motor to achieve the expected equivalent result.

16. In regards to claim 21, Burk et al., as modified by Koshiga et al., above, does not teach the *horizontally disposed* induction motor in a *side space between the casing and outer tub*; however, it has been held that an obvious choice in design is not patentable (*In re Kuhle* 188 USPQ 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Burk et al., as modified by Koshiga et al., to have a direct-drive outer-rotor induction type motor in a horizontal-axis washing machine to achieve the expected of using less water. (Note: this type of direct-drive motor would necessarily be between the tub and casing).

17. Claims 11-12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burk et al. (US Patent No. 5000016) in view of Koshiga et al. (US Patent No. 6148646), as applied to the 103 (a) rejections of claims 1, 7, 10, 13-14, and 17, above, and further in view of Wood (US Patent No. 4891959).

18. Burk et al., as modified by Koshiga et al. does not teach the band driving unit details; however, Wood teaches a band driving unit which is disposed at a side of the band to provide tension to the band, Fig. 2. A solenoid (126) is fixed to both ends of the band to apply a force "for making both ends of the band approach each other", when an external supply is applied (Column 4, Lines 0-23). A return spring (116) returns the

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band into an initial state when the external power supplied to the solenoid is cut off. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Burk et al., as modified by Koshiga et al. with Wood to create a direct-drive washing machine with conventional (electronic) control of the ring gear speed to achieve the expected result of greater control of the washing process.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON P. RIGGLEMAN whose telephone number is (571)272-5935. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Barr/

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Supervisory Patent Examiner, Art Unit 1792

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